General Recommendations on Immunization segment from Immunization Update satellite broadcast, August 15, 2002

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Our first topic today is the recent revision of the General Recommendations on Immunization. This important ACIP statement was published in Morbidity and Mortality Weekly Report in February 2002. Most ACIP statements address a single vaccine or vaccination issue. The General Recommendations on Immunization is unique among ACIP statements because it provides guidance on vaccination issues common to more than one vaccine. The document is revised on an ad hoc basis, generally every 3 to 5 years. It was first published in November 1976, and has been revised four times since then.

The 2002 revision is the most comprehensive version ever produced. It was also the first ACIP statement published using the new MMWR format, and the first to have a picture on the cover. The picture is Edward Jenner administering the first documented dose of smallpox vaccine in 1796.

New or significantly revised material in the 2002 General Recommendations includes an expanded discussion of contraindications and precautions; methods for alleviation of discomfort caused by injection; prevention of adverse events; and a section discussing vaccination of people with latex allergy. There are also sections discussing vaccination of internationally adopted children and stem cell transplant recipients, discussions of immunization registries and benefit and risk communication and much more.

There are also several recommendations that represent significant changes from earlier versions of the document. We would like to spend some time today discussing some of these changes. These are the timing and spacing of vaccine doses, in particular when doses are given too close together; the nonsimultaneous administration of live virus vaccines; vaccines given by an incorrect route or site; waiting periods after vaccination; and aspiration before administration of vaccine.

The spacing of vaccine doses has been included in the General Recommendations on Immunization since the first edition in 1976. The 2002 edition contains an extensive discussion of the appropriate ages and interval between doses. Arguably, the

centerpiece of the document is Table 1. This table contains a listing of every dose of every commonly used vaccine. For each of these doses, the table includes the recommended age for that dose, the minimum age for that dose, the recommended interval to the next dose, and the minimum interval to the next dose. This single table provides all the information you need for scheduling vaccine doses.

ACIP recommends that providers schedule vaccines as close to the recommended age and intervals as possible. The recommended schedule, age for specific doses, and spacing of doses is supported by data from clinical trials of the vaccine.

There are times when it's necessary to give vaccines earlier or closer together than recommended in the routine schedule. Minimum ages and intervals can be used in these circumstances, for instance when a person is behind on the schedule, and it's necessary to catch them up. Minimum ages and intervals could also be used in other situations when the vaccination schedule may need to be accelerated, such as when international travel is impending.

While there are less scientific data supporting the use of minimum intervals and ages, ACIP believes that the response to doses given at these minimum ages and intervals will be acceptable. In practice, vaccine doses are sometimes administered earlier than the minimum age or minimum interval. In the past, ACIP has recommended that doses of vaccine separated by less than the recommended minimum interval- even one day less- should not be considered part of a primary series. ACIP continues to recommend that vaccine doses should not be given at less than the minimum intervals or earlier than the minimum age. But in an effort to increase the flexibility of the complicated childhood immunization schedule, ACIP now recommends that vaccine doses administered up to four days before the minimum interval or age can be counted as valid. This four day period before the minimum age or interval is being referred to as the grace period. ACIP believes that administering a dose a few days earlier than the minimum interval or age is unlikely to have a significant negative effect on the immune response to that dose. This four day grace period can be applied to all ages and intervals listed in Table 1.

The grace period should NEVER be used when scheduling future vaccination visits. It should be used primarily when reviewing vaccination records, such as for day care or school entry. The 4-day grace period may also be useful in situations where

a child visits a provider a few days earlier than a scheduled vaccination appointment. For example, if a child comes to the office or clinic for an ear check 27 days after his or her second DTaP dose, the provider could administer the third DTaP at that visit rather than having the child return for vaccination the next day.

The 4 day grace period recommendation by ACIP will cause a conflict with some state school entry requirements. For instance, most state school requirements mandate the first dose of MMR to be given on or after the first birthday. As a result, not all states will accept this grace period for some or all vaccine doses. You should determine your state program's position on this before you begin using the grace period. The reason that some states are not accepting the grace period is because to do so would mean changing the wording of the school requirement, which often requires an act of the state legislature. So be sure to check with your state immunization program before adopting the grace period.

The second new issue in the General Recommendations concerns the nonsimultaneous administration of live vaccines. Since 1983, ACIP has recommended that whenever possible, parenteral live virus vaccines not administered on the same day should be administered at least 30 days apart. However, ACIP has never provided guidance on a course of action if two live vaccines were given less than 30 days apart.

The recommendation to separate live virus vaccines by 30 days results from concern that the vaccine given first could interfere with response to the vaccine given second. These concerns were initially based on two 1965 studies that indicated that recent measles vaccination reduced the response to smallpox vaccine.

In 2001, the National Immunization Program conducted a study using the vaccine safety datalink system to investigate risk factors for varicella vaccine failure- children who got chickenpox even though they had been vaccinated. This study found that children who received varicella vaccine less than 30 days after MMR vaccination had a significantly increased risk of breakthrough varicella compared to those who received varicella vaccine before, simultaneous with, or more than 30 days after MMR. This study provides additional evidence that interference can occur between two live vaccines given less than 28 days apart. ACIP now recommends that when two live vaccines are not given on the same day but are separated by less than 28 days, the live vaccine given SECOND should be

repeated, unless serologic testing indicates that a response to the vaccine has occurred. For example, if a dose of MMR were given 2 weeks after a dose of varicella vaccine, the MMR should be repeated. The repeat dose should be spaced at least 4 weeks after the invalid dose. The 4 day grace period should NOT be applied to this interval. An exception to this rule is single antigen measles vaccine followed by yellow fever vaccine. Data are available that show that measles vaccine doesn't interfere with yellow fever vaccine given as little as 7 days later.

The next new issue is doses of vaccine given by a nonstandard route or site. In the 1994 revision of the General Recommendations, ACIP recommended that any vaccination using less than a standard dose or a nonstandard route or site of administration should not be counted, and the person should be revaccinated according to age. This recommendation was intended to discourage inappropriate vaccination practices, such as administration of half doses of vaccine, or inappropriate routes of vaccination, particularly vaccination in the gluteus. But this recommendation also led to repetition of some vaccine doses given by routes other than those recommended by the manufacturer, but whose route of administration probably had no significant effect on immunogenicity. An example of this would be the administration of MMR or varicella vaccine by the intramuscular route rather than the recommended subcutaneous route.

ACIP still discourages variance from the recommended route or site of injection. But now ACIP recommends to accept all doses given by a nonstandard route or site- with two exceptions. The exceptions are rabies and hepatitis B vaccine administered in the gluteus area, and hepatitis B vaccine given by any route except intramuscular. There is evidence that administering rabies in the gluteus, and administering hepatitis B vaccine by any route except intramuscular reduces immunogenicity. So these doses should be repeated. The reason for this new recommendation is that available data do not justify repeating vaccines given by the wrong route or site, except rabies and hepatitis B vaccines.

There is one other possible exception to this recommendation you should be aware of. Although not in the General Recommendations, the CDC Division of Viral Hepatitis recommends that hepatitis A vaccine not given by the intramuscular route be repeated using the correct route.

The section of the document that addresses vaccines

administered outside the United States has been greatly expanded, including a detailed discussion of internationally adopted children. In the past, ACIP has recommended that all documented doses be accepted as valid if they were administered according to U.S. age and interval recommendations. This recommendation is still generally applicable. However, there is evidence that among some children adopted from outside the U.S., particularly from China, Russia, and eastern Europe, written immunization records may NOT accurately reflect the child's immunity status. ACIP recommends that the immunization records of these children be scrutinized very carefully. Age-appropriate revaccination is generally recommended if there is any doubt about the validity of the written record. For providers or parents who do not wish to repeat every vaccine dose, serologic testing is an option, particularly for tetanus and diphtheria antitoxin in children whose records indicate 3 or more doses of DTP. Additional details are provided, including information about the availability and interpretation of serologic tests.

Another new issue in the General Recommendations is having a patient or client wait for a certain time after vaccination. Most providers assume that a waiting period after vaccination is to monitor the person for an allergic reaction. Anaphylactic reactions after vaccination are extremely rare if the person is properly screened before giving the vaccine. But syncopal episodes - fainting- are not uncommon. Syncopal episodes are rare in infants and young children, and are most common in older children and adolescents. Every person who has given vaccines for a few years has seen a 200 pound high school linebacker faint after receiving a shot. Serious injury can result from a syncopal episode, including broken bones, head trauma, and brain injury.

One way to prevent a syncope-related emergency pertains to the patient's posture or position during vaccine administration. Infants and young children are usually held by a parent or sitting during their immunizations. It's a good idea for older children, adolescents and adults to sit during vaccination. Sitting during vaccine administration may either prevent syncope or prevent an injury caused by a fall. Most syncopal episodes occur less than 5 minutes after vaccine administration, and nearly 90% occur within 15 minutes. As a result, ACIP now recommends that you should consider observing vaccinated people for 15 to 20 minutes after vaccination, if possible. This is particularly important if you are vaccinating older children, adolescents and adults.

A final issue has to do with vaccination technique, in particular aspiration. Aspiration refers to gently pulling back on the plunger of a syringe to check for blood before injection of the vaccine.

Previous versions of the General Recommendations have recommended aspiration prior to injection, particularly before intramuscular injection. Although this practice is advocated by some experts, and most nurses are taught to aspirate before injection, there is no evidence that this procedure is necessary. There is no evidence that any person has ever been injured because of the failure to aspirate before injection. As a result, the 2002 General Recommendations does not recommend aspiration before injection. It doesn't specifically say NOT to aspirate either. The issue is being left to the individual giving the injection.

If your procedure includes aspiration and blood appears, the needle should be withdrawn, and a new site selected. ACIP doesn't specify what to do with a syringe that has a little blood mixed in with the vaccine. But we think the needle should NOT be reinserted. As soon as the needle enters the tissue it is contaminated. Avoidance of needle stick injury should be your first priority, so discard the syringe and the vaccine in your sharps container, and start over. The simplest way to avoid seeing a little blood in a syringe, and wasting an expensive dose of vaccine ,is to just not aspirate in the first place.

The revised General Recommendations on Immunization should be on every vaccine provider's reading list. You can download a copy from the MMWR website or order a printed copy from the National Immunization Program website. We will give you that address at the end of the program.